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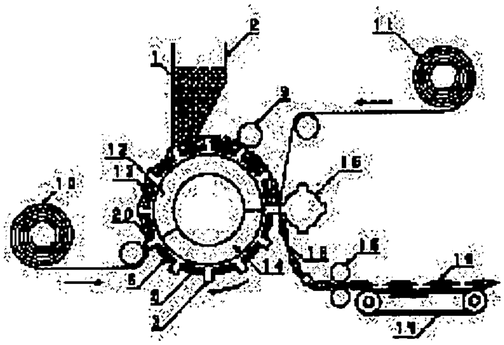
(54) PRODUCTION OF PACKED ARTICLE

(57)Abstract:

PURPOSE: To prevent creases at sealed parts and facilitate a high speed operation, by sucking a packing material bearing a magnetic powder while holding the material on the surface of packing material by a magnet to coat the material with another material for sealing it, in a producing method of a boxed and packed article like an exothermic material.



CONSTITUTION: A packing material 10 is fed to the recessions 5 of a rotary drum 3 rotating clockwise to form hollows 20 on the packing material by the sucking force of a vacuum chamber 12. Next, a specified volume of exothermic agent 1 is fed from a hopper 2 to the hollows 20 of the packing material 10 and the exothermic agent 1 is held to be a required shape by a magnet 6. The rotary drum 3 is continuously driven under this state while molding the exothermic agent 1 by a pressing roller 9 to form an exothermic material seal 18 by means of a sealing die-roll 15 after covering with a packing material 11. When the seal arrives at the non-vacuum

chamber 14, it is removed from the rotary drum 3 and separated by a cut roller 16 and then transferred by a conveyor belt 17.

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3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to a disposable Cairo manufacture machine. It is related with the disposable Cairo manufacture machine which packs every one raw material of disposable Cairo automatically in more detail.
[0002]
[Description of the Prior Art] Conventionally, the disposable Cairo manufacture machine which packs every one raw material of disposable Cairo automatically did not exist.
[0003]
[Problem(s) to be Solved by the Invention] This invention aims at offering the disposable Cairo manufacture machine which measures the raw material of disposable Cairo automatically and packs it every one piece.
[0004]
[Means for Solving the Problem] The disposable Cairo manufacture machine of this invention is a disposable Cairo manufacture machine which packs the raw material of disposable Cairo with the 1st original fabric film and the 2nd original fabric film. The measuring drum, the transition drum, the conveyance drum, and the seal drum are constituted from an entrance side of a raw material by the order toward the outlet side of a product. Said measuring drum A raw-material measuring means to measure a raw material every one disposable Cairo, and a raw-material maintenance means to hold a raw material on a drum side, It has the holding power cutoff means for transporting a raw material to a transition drum. Said transition drum It has the holding power cutoff means for transporting the raw-material maintenance means and raw material which hold the raw material transported from said measuring drum on a drum side to a conveyance drum. Said conveyance drum Where the raw material transported from said transfer drum is carried on the 1st original fabric film, it has a raw-material maintenance means to hold on a drum side. Said seal drum It is characterized by having the sealing device which heat seals a raw-material maintenance means to hold the raw material transported from said conveyance drum on a drum side in the condition of having inserted with the 1st original fabric film and the 2nd original fabric film, and the 1st and 2nd original fabric film.
[0005] Moreover, the raw-material measuring means of said measuring drum consists of members for measuring installed by the shaft orientations of a drum in contact with two or more crevices formed in the front face of a measuring drum, and the front face of a drum. The raw-material maintenance means consists of two or more permanent magnets installed in the lower part of each of said crevice, respectively. The holding power cutoff means consists of cutoff plates installed between the inner skin of a measuring drum, and said permanent magnet. The other end to which the end which met the inner skin of the measuring drum of this cutoff plate was located near the line top to which the contact of a measuring drum and said transition drum is connected, and met the inner skin of the measuring drum of said shield is characterized by being located in the hand-of-cut side of a measuring drum.
[0006] Moreover, the raw-material maintenance means of said transition drum consists of two or more

permanent magnets installed along with the inner skin of a transition drum. The holding power cutoff means consists of shields installed between the inner skin of a transition drum, and said permanent magnet. The other end to which the end which met the inner skin of the transition drum of this shield was located near the line top to which the contact of a transition drum and said conveyance drum is connected, and met the inner skin of the transition drum of said shield is characterized by being located in the hand-of-cut side of said transition drum.

[0007] Moreover, it is characterized by the raw-material maintenance means of said conveyance drum consisting of two or more permanent magnets installed in the lower part of the conveyance drum side where two or more crevices were formed in the front face, and each of said crevice, respectively. Furthermore, it is characterized by the raw-material maintenance means of said seal drum consisting of two or more permanent magnets installed in the lower part of the seal drum side where two or more crevices were formed in the front face, and each of said crevice, respectively.

[0008]

[Function] In this invention, the raw material of disposable Cairo supplied from the input port of a hopper is measured on a measuring drum by the volume and abbreviation same amount of a crevice which were formed in the front face of a measuring drum. And since the iron powder contained in a raw material is attracted by the permanent magnet, a raw material is transported with a revolution of a measuring drum, if it comes near the line top to which the contact of a measuring drum and a transition drum is connected, by the shield, the magnetic flux of a permanent magnet will be intercepted and a raw material will be transported to a transition drum.

[0009] Attraction maintenance is carried out with a permanent magnet, a raw material is transported with a revolution of a transition drum, the magnetic flux of a permanent magnet is intercepted by the shield near the line top to which the contact of a transition drum and a conveyance drum is connected, a raw material is transported to a conveyance drum and the iron powder by which the raw material transported to the transition drum is contained in a raw material is held in the crevice formed in the front face of a conveyance drum through the 1st original-fabric film.

[0010] Since the iron powder by which the raw material held in the crevice of a conveyance drum is contained in a raw material is attracted by the permanent magnet, Where a raw material is inserted with the 1st original fabric film and the 2nd original fabric film near the line top to which it is transported with a revolution of a conveyance drum in the condition of having been carried on the 1st original fabric film, and the contact of a conveyance drum and a seal drum is connected A raw material is held in the crevice formed in the front face of a seal drum through the 2nd original fabric film.

[0011] The raw material held in the crevice of a seal drum is transported with a revolution of a seal drum in the condition of having been inserted with the 1st original fabric film and the 2nd original fabric film since the iron powder contained in a raw material was attracted by the permanent magnet, and is heat sealed in the direction in every direction with a sealing device, and disposable Cairo is formed continuously. As mentioned above, since disposable Cairo is continuously formed by drum lifting in the disposable Cairo manufacture machine of this invention and there are not timing gap and location gap of a film, the equipment of timing doubling is unnecessary.

[0012]

[Example] Below, the example of this invention is explained based on a drawing. Drawing 1 shows the disposable Cairo manufacture machine A which is one example of invention. As for this disposable Cairo manufacture machine A, the measuring drum 1, the transition drum 2, the conveyance drum 3, and the seal drum 4 are constituted from an entrance side of a raw material by that order toward the outlet side of a product.

[0013] The measuring drum 1 is equipped with the raw-material measuring means 11, the raw-material maintenance means 12, and the holding power cutoff means 13 as shown in drawing 2 -4. The raw-material measuring means 11 measures the raw material m of disposable Cairo supplied from the input port of the hopper 8 attached ahead of the measuring drum 1 (right-hand side of drawing 1) to the raw material of every one disposable Cairo, and as shown in drawing 2 , it consists of members 15 for measuring installed by the shaft orientations of a drum 1 in contact with two or more crevices 14 formed in the front face of a drum 1, and the front face of a drum 1. Although the number of crevices 14 could be set up free, in this example, it was dealt with and formed the crevice of two trains along the hand of cut of a drum 1 from a viewpoint of easy **. Moreover, especially, although what kind of configuration is sufficient as the configuration of a crevice 14 without a limit, it is made into the shape of a square like this example according to the general configuration of disposable Cairo. Furthermore, the magnitude of a crevice 14 can determine the amount of the raw material which constitutes one disposable Cairo, and the volume can be set up free.

[0014] In addition, disposable Cairo is formed considering iron powder, water, a vermiculite, activated carbon, salts, etc. as a raw material. Although the member 15 for measuring is a member of the shape of a rod which cuts the raw material m by which reinforcement was carried out to the crevice 14, if it has even the function except the amount of an excess, it can be especially used by any members without a limit.

[0015] The raw-material maintenance means 12 holds a raw material m in the crevice 14 formed in the drum 1, and as shown in drawing 2 -4, it consists of two or more permanent magnets 16 and 17 installed in the lower part of each crevice 14, respectively. That is, a permanent magnet 16 is permanent magnet of three sheets 16a, 16b, and 16c. It is constituted as a lot, and each permanent magnet 16 is arranged so that a magnetic pole may be located in the lower part of each crevice 14, while there is along the hand of cut of a drum 1. and central permanent magnet 16b of the adjoining permanent magnets 16 and 16 and 16b although mutual is arranged at theta= 30 degrees of central angles -- a central angle -- theta can be set up free. in addition -- this example -- permanent magnet of three sheets 16a, 16b, and 16c Although it considered as the lot and being installed in the lower part of one crevice 14, the permanent magnet of one sheet can also be used. Moreover, the same is said of a permanent magnet 17.

[0016] The holding power cutoff means 13 is for transporting a raw material m to the transition drum 2, and as shown in drawing 3 -4, it consists of shields 18 installed between the inner skin of the measuring drum 1, and said permanent magnets 16 and 17. A shield 18 is the inverted-L-shaped plate which consisted of inner skin of the measuring drum 1, the curved-surface section 81 bent by the abbreviation same configuration, and the mounting section 82, as shown in drawing 5 . Die-length L of the curved-surface section 81 is a little smaller than the width of face of the measuring drum 1, and the width of face W of the curved-surface section 81 is formed a little more greatly than the thickness of permanent magnets 16 and 17. End 81a of the cross direction of the curved-surface section 81 It is located near the line top to which the contact of the measuring drum 1 and the transition drum 2 is connected. Other end 81b of the cross direction of the curved-surface section 81 It is arranged so that it may be located in the hand-of-cut side of the measuring drum 1, and the mounting section 82 is being fixed to the stanchion 19 which does not rotate with the measuring drum 1 as shown in drawing 3 . Therefore, a shield 18 does not rotate with the measuring drum 1, but is in the condition of having been fixed. In addition, when the magnetic flux of permanent magnets 16 and 17 could be intercepted, it could be especially used by the member of any construction material without the limit, but by this example, since the shield 18 had the good cutoff force, the griddle was used for it. Moreover, the same is said of the shield 25 of the transition drum 2.

[0017] The transition drum 2 is equipped with the raw-material maintenance means 21 and the holding power cutoff means 22. The raw-material maintenance means 21 holds a raw material m on the front face of the transition drum 2, and as shown in drawing 6 -7, it consists of two or more permanent magnets 23 and 24 installed along with the inner skin of the transition drum 2. And since it is what holds the raw material m held on the 1st page of a measuring drum in the condition as it is, the raw-material maintenance means 21 of the configuration is the same as that of the raw-material maintenance means 12 of said measuring drum 1, and abbreviation, if the point that the crevice is not formed in the 2nd page of a transition drum is removed. That is, a permanent magnet 23 is permanent magnet of three sheets 23a, and 23b. 23c is constituted as 1 set and each permanent magnet 23 is arranged along the hand of cut of a drum 2. And central permanent magnet 23b and 23b Mutual is arranged at theta= 30 degrees of central angles. Moreover, the same is said of a permanent magnet 24.

[0018] The shield 25 (refer to drawing 5) of the same configuration as the holding power cutoff means

13 of the measuring drum 1 is used, and the holding power cutoff means 22 is that the arrangement is only different. That is, the end of the cross direction of the curved-surface section of a shield 25 is located near the line top to which the contact of the transition drum 2 and the conveyance drum 3 is connected, the other end of the cross direction of the curved-surface section of a shield 25 is arranged so that it may be located in the hand-of-cut side of the transition drum 2, and the mounting section is being fixed to the stanchion 26 which does not rotate with the transition drum 2 as shown in drawing 6 . Therefore, a shield 25 does not rotate with the transition drum 2, but is in the condition of having been fixed.

[0019] The conveyance drum 3 is equipped with the raw-material maintenance means 31. The raw-material maintenance means 31 holds a raw material m on the front face of the conveyance drum 3, and as shown in drawing 8 -9, it consists of two or more permanent magnets 32 and 33 installed in the inner skin of the conveyance drum 3. In addition, two or more crevices 34 are formed in the front face of the conveyance drum 3, and it is the same as that of the crevice 14 of said measuring drum 1, and abbreviation about the magnitude of a crevice 34, a configuration, and an array. And two or more magnets 32 and 33 are installed in the lower part of each crevice 34, respectively.

[0020] On the other hand, as shown in drawing 1 , the raw material m by which the 1st original fabric film p has been held at the 2nd page top of a transition drum supply, now since it is will be held in a crevice 34 through the 1st original fabric film p at the conveyance drum 3 from the 1st original fabric drum 6. In addition, as the 1st original fabric film p is shown in drawing 11, adhesives 62 are applied to the synthetic-resin film 61, an adhesion side is formed, and the temporary adhesive tape 63 is stuck on the adhesion side.

[0021] The seal drum 4 is equipped with the raw-material maintenance means 40 and three sealing devices 44, 46, and 48. The raw-material maintenance means 40 holds a raw material m on the front face of the seal drum 4, and as shown in drawing 10, it consists of two or more permanent magnets 42 and 43 installed in the inner skin of the seal drum 4. In addition, two or more crevices 41 are formed in the front face of the seal drum 4, and it is the same as that of the crevice 14 of said measuring drum 1 and the crevice 34 of said conveyance drum 3, and abbreviation about the magnitude of a crevice 41, a configuration, and an array. And two or more magnets 42 and 43 are arranged at the lower part of each crevice 41, respectively.

[0022] Three sealing devices 44, 46, and 48 heat seal and pack a raw material m, and as shown in drawing 1 , the 1st sealing device 44, the 2nd sealing device 46, and the 3rd sealing device 48 are arranged along the hand of cut of the seal drum 4 at the order. And as shown in drawing 1 , the 2nd original fabric film q is supplied to the seal drum 4 from the 2nd original fabric drum drum 7. In addition, although the nonwoven fabric was used as the 2nd original fabric film q in this example, a synthetic-resin film etc. can also be used.

[0023] The 1st roller 45 as shown in drawing 12 is built in, and the 1st sealing device 44 is hand-plate of two sheets 45a to a circumferencial direction in the ends and the abbreviation center section of the 1st roller 45. And hand-plate of one sheet 45b It is formed and is hand-plate of four sheets 45c at abbreviation regular intervals in the shaft orientations of the 1st roller 45. It is formed. And the cartridge heater 50 is built in the interior of the 1st roller 45, respectively. The 2nd roller 47 as shown in drawing 14 is built in, and the 2nd sealing device 44 is hand-plate of two sheets 47a to a circumferencial direction in the ends and the abbreviation center section of the 2nd roller 47. And hand-plate of one sheet 47b It is formed. And the cartridge heater 51 is built in the interior of the 2nd roller 47. The 3rd roller 49 as shown in drawing 16 is built in, and the 3rd sealing device 48 is hand-plate of four sheets 49c at abbreviation regular intervals in the shaft orientations of the 3rd roller 49. It is formed. And the cartridge heater 52 is built in the interior of the 3rd roller 49. In addition, the number of the hand plate formed in the 1st roller 45 of the 1st sealing device 44, thickness, etc. can be set up free.

[0024] The 1st sealing device 44 can push the 1st and 2nd original fabric films p and q with which hand-plate 45a, 45b, and 45c sandwiched the raw material m whenever the 1st roller 45 rotated one time on the 4th page of a seal drum, and can heat seal them now with the heat of a cartridge heater 50 then. And the 2nd sealing device 46 is hand-plate 47a and 47b, whenever the 2nd roller 47 rotates one time. Hand-plate 45a of said 1st roller 45, and 45b The part heat sealed is again heat sealed with the heat of a cartridge 51. Moreover, the 3rd sealing device 48 is hand-plate 49c, whenever the 3rd roller 49 rotates one time. Hand-plate 45c of said 1st roller 45 The part heat sealed is again heat sealed with the heat of a cartridge 52. Therefore, the number of the hand plate formed in the 2nd roller 47 of the 2nd sealing device 46 and the 3rd roller 49 of the 3rd sealing device 48, thickness, etc. are restricted to the number of the hand plate formed in the 1st roller 45 of the 1st sealing device 44, thickness, etc.

[0025] In addition, although it has three sealing devices, the 1st sealing device 44, the 2nd sealing device 46, and the 3rd sealing device 48, on the 4th page of a seal drum in this example, only 1st sealing device 44 can manufacture disposable Cairo where the raw material m was packed with the 1st and 2nd original fabric films p and q. However, in order to pack sufficient reinforcement that it is hard to be torn, it is desirable to have three sealing devices like this example.

[0026] Moreover, the steam path 54 is formed in the revolving shaft 53 of the seal drum 4 so that it may be shown drawing 10. In addition, an electromagnet can also be used although the permanent magnet was used as a magnet in this example.

[0027] A sending-out means to send out disposable Cairo continuously heat sealed on the seal drum 4 next to degree process is explained. In drawing 1 , the 1st belt with which, as for 56, the 1st original fabric film p contacts, and 57 are the 2nd belt with which the 2nd original fabric film q contacts. And with the 1st belt 56 and the 2nd belt 57, disposable Cairo continuously heat sealed on the seal drum 4 can apply delivery, and is sent to degree process.

[0028] Below, based on drawing 1 and drawing 18, the fabrication operation of disposable Cairo by the disposable Cairo manufacture machine A of this example is explained.

I: The raw material m of disposable Cairo supplied from the input port of a hopper 8 is first stuffed into a heap condition in the crevice 14 of the measuring drum 1.

II: While the raw material m stuffed into the crevice 14 at the heap is held in a crevice 14 and transported to the hand of cut (the direction of s of drawing 18) of the measuring drum 1 with permanent magnets 16 and 17, reinforcement parts other than the part stuffed in the crevice 14 by the member 15 for measuring are cut, and the raw material m stuffed in the crevice 14 is transported to the transition drum 2.

III : if the raw material m stuffed in the crevice 14 is transported near the line top to which the contact of the measuring drum 1 and the transition drum 2 is connected, with the shield 18 of the measuring drum 1, the magnetic flux of permanent magnets 16 and 17 will be intercepted, and a raw material m will be separated from the inside of a crevice 14.

IV: With the permanent magnets 23 and 24 of the transition drum 2, the raw material m separated from the inside of a crevice 14 is held on the front face of the transition drum 2, and is transported to the hand of cut (the direction of t of drawing 18) of the transition drum 2.

V: If the raw material m held on the front face of the transition drum 2 is transported near the line top to which the contact of the transition drum 2 and the conveyance drum 3 is connected, with the shield 25 of the transition drum 2, the magnetic flux of permanent magnets 23 and 24 will be intercepted, and a raw material m will be separated from the front face of the transition drum 2.

VI: With the permanent magnets 32 and 33 of the conveyance drum 3, the raw material m separated from the front face of the transition drum 2 is held in the crevice 34 of the conveyance drum 3, and is transported to the hand of cut (the direction of u of drawing 18) of the conveyance drum 3. And since the 1st original fabric film p is supplied to the conveyance drum 3, a raw material m is held through the 1st original fabric film p in a crevice 34. In addition, the 1st original fabric film p is supplied to the seal drum 4 through the conveyance drum 3.

[0029] VII : if the raw material m held through the 1st original fabric film p in the crevice 34 is transported near the line top to which the contact of the conveyance drum 3 and the seal drum 4 is connected, a raw material m will be twisted around the seal drum 4 with the 1st original fabric film p. And since the 2nd original fabric film q is supplied to the seal drum 4, a raw material m is in the condition inserted with the 1st original fabric film p and the 2nd original fabric film q, with the permanent magnets 42 and 43 of the seal drum 4, is held in the crevice 41 of the seal drum 4, and is transported to the hand of cut (the direction of v of drawing 18) of the seal drum 4.

VIII: The raw material m inserted with the 1st original fabric film p and the 2nd original fabric film q is transported to the underside of the 1st sealing device 44. The 1st roller 45 of the 1st sealing device 44 is hand-plate 45a, 45b, and 45c for every revolution, as it is rotating synchronizing with the seal drum 4 and is shown in drawing 13. It heat seals by pushing the 1st and 2nd original fabric films p and q against the 4th page of a seal drum. A sign S1 shows the seal section.

IX: A raw material m is further transported to the underside of the 2nd sealing device 46 with a revolution of the seal drum 4. The 2nd roller 47 of the 2nd sealing device 46 is hand-plate 47a and 47b, as it is rotating synchronizing with the seal drum 4 and is shown in drawing 15. It heat seals in piles to the lengthwise direction (the migration direction of the 1st and 2nd original fabric films p and q) of the seal part S1 heat sealed in said VIII process. A sign S2 shows this 2nd seal section.

X: A raw material m is further transported to the underside of the 3rd sealing device 48 with a revolution of the seal drum 4. The 3rd roller 49 of the 3rd sealing device 48 is hand-plate 49c, as it is rotating synchronizing with the seal drum 4 and is shown in drawing 17. It heat seals in piles in the longitudinal direction (shaft orientations of the seal drum 4) of the seal part S1 heat sealed in said VIII process. A sign S3 shows this 3rd seal part. In addition, in said VIII-X process, in order to heat seal effectively the 1st and 2nd original fabric films p and q, the path 54 for steam formed in the revolving shaft 53 of the seal drum 4 lets steam pass, and the interior of the seal drum 4 is warmed by steam.

XI: As shown in drawing 19, disposable Cairo which finished the 3 time seal is in the condition that the raw material m was continuously packed with the 1st and 2nd original fabric films p and q, is sent out from the seal drum 4 and sent to degree process with said 1st belt 56, the 2nd belt 57, etc.

[0030] Since disposable Cairo which measured and transported the raw material m of disposable Cairo to the amount of every one Cairo according to the disposable Cairo manufacture machine A of this example, inserted and heat sealed the raw material m between the 1st original fabric film p and the 2nd original-fabric film q, and was packed one piece at a time can be continuously formed by drum lifting like the above, and there are not timing gap and location gap of a film, the equipment of timing doubling is unnecessary. Therefore, since disposable Cairo can be manufactured continuously easily, improvement in working capacity can be aimed at. Moreover, since it is heat sealing on the 1st and 2nd original fabric films p and q in the location same in piles twice, disposable Cairo where the package which has sufficient reinforcement which cannot be torn easily was carried out can be obtained.

[0031]

[Effect of the Invention] Since drum lifting can perform measuring of every one Cairo of a raw material, migration, insertion of the raw material of a between [the 1st original fabric film and the 2nd original fabric films], and heat sealing of every one Cairo continuously in the disposable Cairo manufacture machine of this invention and there are not timing gap and location gap of a film, the equipment of timing doubling is unnecessary. Therefore, since disposable Cairo can be manufactured continuously easily, large improvement in working capacity can be aimed at.

[Translation done.]